

## C L A I M S

What is claimed and desired to be secured by Letters Patent is as follows:

1. A closure for setting engagement with a structural member and comprising:
  - (a) a substantially cylindrical body having an outer cylindrical surface relative to a central axis;
  - (b) a guide and advancement flange extending helically about said outer cylindrical surface, said flange having a leading surface and a trailing surface relative to a direction of forward advancement along said axis;
  - (c) at least one of said leading surface and said trailing surface being compound in contour spaced from said body cylindrical surface and including an inward facing anti-splay surface component facing generally toward said body axis; and

(d) said body having a multi-stepped bore formed therein, said multi-stepped bore including a plurality of substantially cylindrical component bores sequentially diminishing in diameter in steps toward said direction of forward advancement thereby forming a plurality of cylindrical surfaces that intersect shoulders at respective circular edges sized and shaped so as to be adapted to provide a grip to an easy out tool.

2. The closure as set forth in Claim 1 and including:

- (a) an installation head shaped to enable non-slip engagement of said installation head by an installation tool; and
- (b) said installation head being connected to said body by a breakaway region formed in such a manner that said breakaway region fails in response to a selected level of torque between said installation head and said body to enable separation of said installation head from said body.

3. The closure as set forth in Claim 1 wherein:
  - (a) said body has a forward end relative to said direction of forward advancement; and
  - (b) said body having a set point formed on said forward end adapted to enhance setting engagement of said body into a surface of a structural member.
  
4. The closure as set forth in Claim 1 wherein:
  - (a) said body has a forward end relative to said direction of forward advancement; and
  - (b) said body has a V-shaped set ring formed on said forward end adapted to enhance setting engagement of said fastener into a surface of a structural member.

5. The closure as set forth in Claim 1 in combination with a bone implant screw adapted for connection to a bone fixation structural member, said bone implant screw including:
- (a) a threaded shank adapted for threadably implanting into a bone;
  - (b) an open head formed by a pair of spaced apart arms having mutually facing channel surfaces defining a structural member receiving channel to receive a bone fixation structural member; and
  - (c) said mutually facing channel surfaces having respective mating guide and advancement structure formed therein which are compatible with said guide and advancement flange of said body to enable guiding and advancement of said body into said channel to thereby clamp said bone fixation structural member therein.

6. The closure and bone implant screw combination as set forth in Claim 5 wherein:
  - (a) said mating guide and advancement structures of said bone implant screw include an outward anti-splay surface component which cooperates with said inward anti-splay surface component of said body in such a manner as to interlock and resist splaying of said arms in reaction to forces exerted on said arms.
7. The combination as set forth in Claim 6 wherein:
  - (a) said guide and advancement flange has a relatively enlarged region near an outer periphery thereof which forms said inward anti-splay surface component;
  - (b) said mating guide and advancement structures are contoured in a complementary manner to said guide and advancement flange to form said outward anti-splay surface component; and
  - (c) said inward anti-splay surface component interlock with said outward anti-splay surface component when said body is guided and advanced into said open screw head of said bone implant screw.

8. The closure as set forth in Claim 1 wherein:
- (a) said cylindrical component bores of said multi-stepped bore diminish in such steps and have such cylindrical lengths that are sized and shaped so as to form said respective circular edges having locations and diameters located so as to be adapted to enhance engagement of said body by a reverse threaded, self-tapping fastener removal tool.
9. A closure for setting engagement with a structural member and comprising:
- (a) a substantially cylindrical body having an outer cylindrical surface relative to a central body axis of rotation;
  - (b) an external guide and advancement flange extending helically about said outer cylindrical surface, said flange having a trailing surface relative to said forward advancement direction;
  - (c) said trailing surface being compound in contour and including an inward anti-splay surface component facing generally toward said body;
  - (d) said body having a multi-stepped bore formed therein, said multi-stepped bore including a

plurality of substantially cylindrical component bores diminishing in diameter in steps from a rear surface of said body toward a forward direction thereof along said axis thereby forming a plurality of cylindrical surfaces that intersect shoulders at respective circular edges; and

- (e) said cylindrical component bores diminishing in such steps and having such cylindrical lengths as to form said respective circular edges having locations and diameters sized and shaped so as to enhance engagement of said body by a reverse threaded, self-tapping removal tool.

10. The closure as set forth in Claim 9 and including:

- (a) an installation head shaped to enable non-slip engagement of said installation head by an installation tool; and
- (b) said installation head being connected to said body by a breakaway region formed in such a manner that said breakaway region fails in response to a selected level of torque between said installation head and said body to enable separation of said installation head from said body.

11. The closure as set forth in Claim 9 wherein:
- (a) said body has a forward end relative to a forward advancement direction; and
  - (b) said body has a set point formed on said forward end to enhance setting engagement of said body into a surface of a structural member.

12. The closure as set forth in Claim 9 wherein:
- (a) said body has a forward end relative to a forward advancement direction; and
  - (b) said body has a V-shaped set ring formed on said forward end to enhance setting engagement of said body into a surface of a structural member.



13. The closure as set forth in Claim 9 in combination with a bone implant screw adapted for connection to a bone fixation structural member, said bone implant screw including:

- (a) a threaded shank adapted for threadably implanting into a bone;
- (b) an open head formed by a pair of spaced apart arms having mutually facing channel surfaces defining a structural member receiving channel to receive a bone fixation structural member; and
- (c) said mutually facing channel surfaces having mating internal guide and advancement structure formed therein that are compatible with rotationally mating with said flange of said body to enable advancement of said body into said channel to thereby clamp said bone fixation structural member therein.

14. The closure and bone implant screw combination as set forth in Claim 13 wherein:

- (a) said mating structures of said bone implant screw include an outward anti-splay surface component which cooperates with said inward anti-splay surface component of said body in such a manner as to resist a tendency of said arms to splay in reaction to forces applied to said arms.

15. The combination as set forth in Claim 14 wherein:

- (a) said flange has a relatively enlarged outer region near a periphery thereof which forms said inward anti-splay surface component;
- (b) said mating structures are contoured in a complementary manner to said external flange to form said outward anti-splay surface component; and
- (c) said inward anti-splay surface component engages said outward anti-splay surface component when said body is rotated into said open screw head of said bone implant screw.

16. A closure for setting engagement with a structural member and including a substantially cylindrical body having an outer cylindrical surface relative to a central axis and a guide and advancement flange extending helically about said outer cylindrical surface relative to said axis, said flange having a leading surface and a trailing surface relative to said forward advancement direction, and wherein:
- (a) at least one of said leading surface and said trailing surface being compound in contour and including an inward anti-splay surface component facing generally toward said fastener axis; and
  - (b) said body having a multi-stepped bore formed therein, said multi-stepped bore including a plurality of substantially cylindrical component bores diminishing in diameter in steps toward said forward advancement direction thereby forming a plurality of cylindrical surfaces that intersect shoulders at respective circular edges.

17. The closure as set forth in Claim 16 and including:
- (a) an installation head sized and shaped to be adapted to enable non-slip engagement of said installation head by an installation tool; and
  - (b) said installation head being connected to said body by a breakaway region formed in such a manner that said breakaway region fails in response to a selected level of torque between said installation head and said body to enable separation of said installation head from said body.
18. The closure as set forth in Claim 16 and including:
- (a) said body having a forward end relative to said forward advancement direction;
  - (b) said body having a set point formed on said forward end adapted to enhance setting engagement of said body into a surface of a structural member; and
  - (c) said body having a V-shaped set ring formed on said forward end in surrounding relation to said set point adapted to further enhance setting engagement of said body into a surface of such a structural member.

19. The closure as set forth in Claim 16 in combination with a bone implant screw adapted for connection to a bone fixation structural member, said bone implant screw including:
- (a) a threaded shank adapted for threadably implanting into a bone;
  - (b) an open head formed by a pair of spaced apart arms having mutually facing channel surfaces defining a structural member receiving channel to receive a bone fixation structural member;
  - (c) said mutually facing channel surfaces having respective mating guide and advancement structures formed therein which are compatible with said guide and advancement flange of said body to enable guiding and advancement of said body into said channel to thereby be adapted to clamp said bone fixation structural member therein; and
  - (d) said mating guide and advancement structures of said bone implant screw including an outward anti-splay surface component which cooperates with said inward anti-splay surface component of said fastener in such a manner as to resist a tendency of said arms to splay in reaction to forces applied to said arms.

20. The combination as set forth in Claim 19 wherein:

- (a) said guide and advancement flange has a relatively enlarged region near an outer periphery thereof which forms said inward anti-splay surface component;
- (b) said mating guide and advancement structures are contoured in a complementary manner to said guide and advancement flange to form said outward anti-splay surface component; and
- (c) said inward anti-splay surface component interlocks with said outward anti-splay surface component when said body is guided and advanced into said open screw head of said bone implant screw.

21. The closure as set forth in Claim 16 wherein:

- (a) said cylindrical component bores of said multi-stepped bore diminish in such steps and have such cylindrical lengths as to form said respective circular edges having locations and diameters adapted to enhance engagement of said body by a reverse threaded, self-tapping fastener removal tool.